CERTIFICATION

| | | | |
|---|---|---|---|
| SDG No: | 1701477D | Laboratory: | Eurofins, Folson, CA |
| Site: | BMSMC | Matrix: | Air |

SUMMARY: Air samples (Table 1) were collected on the BMSMC facility. The BMSMC facility is located in Humacao, PR. Samples were taken January 26 and 29, 2017 and were analyzed in Eurofins Laboratory of Folson, California that reported the data under SDG No.: 1701477D. Results were validated using the validation QC requirements of ASTM D-1946 method for measuring permanent gases and light hydrocarbons in refinery and other sources samples using gas chromatography (GC) and a thermal conductivity detector (TCD) and/or flame ionization detection (FID). The sample integrity and preservation section is validated following the criteria of the following guideline document: USEPA, Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The analyses performed are shown in Table 1. Individual data review worksheets are enclosed for each target analyte group. The data sample summary form shows analyte results that were qualified.

In summary, the results are valid and can be used for decision making purposes.

Table 1. Samples analyzed and analysis performed

| SAMPLE ID | SAMPLE DESCRIPTION | MATRIX | ANALYSIS PERFORMED |
|---|---|---|---|
| 1701477D-01A | B18SS-2-012617 | Air | Methane |
| 1701477D-02A | B18SS-3-012617 | Air | Methane |
| 1701477D-03A | B18SS-4-012617 | Air | Methane |
| 1701477D-04A | B18SS-5-012617 | Air | Methane |
| 1701477D-05A | B13SS-1-012917 | Air | Methane |
| 1701477D-06A | B13SS-2-012917 | Air | Methane |
| 1701477D-07A | B13SS-2DUP-012917 | Air | Methane |
| 1701477D-08A | B13SS-3-012917 | Air | Methane |
| 1701477D-09A | B15SS-1-012917 | Air | Methane |
| 1701477D-10A | B15SS-1DUP-012917 | Air | Methane |
| 1701477D-11A | B13IA-1-012817 | Air | Methane |
| 1701477D-12A | B13IA-2-012817 | Air | Methane |
| 1701477D-13A | B13IA-2DUP-012817 | Air | Methane |
| 1701477D-14A | B13IA-3-012817 | Air | Methane |
| 1701477D-15A | B18IA-5-012817 | Air | Methane |
| 1701477D-16A | B15IA-1-012817 | Air | Methane |
| 1701477D-17A | B15IA-1DUP-012817 | Air | Methane |
| 1701477D-18A | B1315AA-012817 | Air | Methane |

Reviewer Name: Rafael Infante
Chemist License 1888

Signature:

Date: March 18, 2017

eurofins | Air Toxics

**Client Sample ID: B18SS-2-012617**

**Lab ID#: 1701477D-01A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021005** | **Date of Collection: 1/26/17 6:38:00 PM** | |
| **Dil. Factor:** | **2.38** | **Date of Analysis: 2/9/17 08:17 PM** | |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00024 | 0.00022 J |

J = Estimated value.

**Container Type: 1 Liter Summa Canister (100% Certified)**

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Daniel Infante Méndez
# 1888
QUÍMICO LICENCIADO

eurofins | Air Toxics

**Client Sample ID: B18SS-3-012617**

**Lab ID#: 1701477D-02A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021006** | **Date of Collection:** | **1/26/17 6:18:00 PM** |
| **Dil. Factor:** | **2.42** | **Date of Analysis:** | **2/9/17 08:41 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00024 | 0.00019 J |

J = Estimated value.

**Container Type: 1 Liter Summa Canister (100% Certified)**

eurofins | Air Toxics

**Client Sample ID: B18SS-4-012617**

**Lab ID#: 1701477D-03A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021007** | **Date of Collection:** | **1/26/17 5:07:00 PM** |
| **Dil. Factor:** | **2.82** | **Date of Analysis:** | **2/9/17 09:04 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00028 | Not Detected |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B18SS-5-012617**

**Lab ID#: 1701477D-04A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021008** | **Date of Collection: 1/26/17 5:58:00 PM** | |
| **Dil. Factor:** | **2.52** | **Date of Analysis: 2/9/17 09:28 PM** | |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00025 | 0.00019 J |

J = Estimated value.

**Container Type: 1 Liter Summa Canister (100% Certified)**

eurofins | Air Toxics

**Client Sample ID: B13SS-1-012917**

**Lab ID#: 1701477D-05A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021009** | **Date of Collection:** | **1/29/17 3:11:00 PM** |
| **Dil. Factor:** | **2.47** | **Date of Analysis:** | **2/9/17 09:51 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00025 | Not Detected |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B13SS-2-012917**

**Lab ID#: 1701477D-06A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021010** | **Date of Collection:** | **1/29/17 3:55:00 PM** |
| **Dil. Factor:** | **2.58** | **Date of Analysis:** | **2/9/17 10:15 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00026 | 0.0029 |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B13SS-2DUP-012917**

**Lab ID#: 1701477D-07A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021011** | **Date of Collection:** | **1/29/17 3:55:00 PM** |
| **Dil. Factor:** | **2.42** | **Date of Analysis:** | **2/9/17 10:40 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00024 | 0.0028 |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B13SS-3-012917**

**Lab ID#: 1701477D-08A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021012** | **Date of Collection:** | **1/29/17 3:36:00 PM** |
| **Dil. Factor:** | **2.58** | **Date of Analysis:** | **2/9/17 11:04 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00026 | 0.0013 |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B15SS-1-012917**

**Lab ID#: 1701477D-09A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021022** | **Date of Collection: 1/29/17 5:55:00 PM** | |
| **Dil. Factor:** | **4.54** | **Date of Analysis: 2/10/17 12:36 PM** | |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00045 | Not Detected |

**Container Type: 1 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B15SS-1DUP-012917**

**Lab ID#: 1701477D-10A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021013** | **Date of Collection:** | **1/29/17 5:55:00 PM** |
| **Dil. Factor:** | **2.47** | **Date of Analysis:** | **2/9/17 11:28 PM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00025 | 0.00014 J |

J = Estimated value.

**Container Type: 1 Liter Summa Canister (100% Certified)**

eurofins | Air Toxics

**Client Sample ID: B13IA-1-012817**

**Lab ID#: 1701477D-11A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021014** | **Date of Collection:** | **1/29/17 2:45:00 PM** |
| **Dil. Factor:** | **1.64** | **Date of Analysis:** | **2/10/17 08:42 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00019 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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Manuel Infante Méndez
# 1888
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**Client Sample ID: B13IA-2-012817**

**Lab ID#: 1701477D-12A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021015** | **Date of Collection:** | **1/29/17 3:08:00 PM** |
| **Dil. Factor:** | **1.61** | **Date of Analysis:** | **2/10/17 09:07 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00020 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B13IA-2DUP-012817**

**Lab ID#: 1701477D-13A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021016** | **Date of Collection:** | **1/29/17 3:10:00 PM** |
| **Dil. Factor:** | **1.55** | **Date of Analysis:** | **2/10/17 09:38 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00018 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

eurofins | Air Toxics

**Client Sample ID: B13IA-3-012817**

**Lab ID#: 1701477D-14A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021017** | **Date of Collection:** | **1/29/17 2:52:00 PM** |
| **Dil. Factor:** | **1.64** | **Date of Analysis:** | **2/10/17 10:04 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00016 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

eurofins | Air Toxics

**Client Sample ID: B18IA-5-012817**

**Lab ID#: 1701477D-15A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021018** | **Date of Collection:** | **1/29/17 4:25:00 PM** |
| **Dil. Factor:** | **1.64** | **Date of Analysis:** | **2/10/17 10:42 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00027 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B15IA-1-012817**

**Lab ID#: 1701477D-16A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021019** | **Date of Collection:** | **1/29/17 3:44:00 PM** |
| **Dil. Factor:** | **1.61** | **Date of Analysis:** | **2/10/17 11:09 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00021 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B15IA-1DUP-012817**

**Lab ID#: 1701477D-17A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021020** | **Date of Collection:** | **1/29/17 3:44:00 PM** |
| **Dil. Factor:** | **1.55** | **Date of Analysis:** | **2/10/17 11:33 AM** |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00016 | 0.00016 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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**Client Sample ID: B1315AA-012817**

**Lab ID#: 1701477D-18A**

**NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946**

| | | | |
|---|---|---|---|
| **File Name:** | **10021021** | **Date of Collection: 1/29/17 4:12:00 PM** | |
| **Dil. Factor:** | **1.71** | **Date of Analysis: 2/10/17 12:04 PM** | |

| Compound | Rpt. Limit (%) | Amount (%) |
|---|---|---|
| Methane | 0.00017 | 0.00019 |

**Container Type: 6 Liter Summa Canister (100% Certified)**

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**Sample Transportation Notice**
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page 1 of 2

Project Manager Terry Taylor
Collected by: (Print and Sign) David Lindstrand
Company AMAI Email
Address 2709 Winchester City Purchase State NY Zip 10577
Phone 914-251-0400 X309 Fax

**Project Info:**
P.O. #
Project # ~~BMS VI Investi~~
Project Name Buildings 8, 13, 15, 18 and 30

Turn Around Time: [X] Normal [ ] Rush ____ specify

Lab Use Only
Pressurized by: V.V
Date: 2/2/17
Pressurization Gas: ($N_2$) He

| Lab I.D. | Field Sample I.D. (Location) | Can # | Date of Collection | Time of Collection | Analyses Requested | Canister Pressure/Vacuum Initial | Final | Receipt | Final (psi) |
|---|---|---|---|---|---|---|---|---|---|
| 01A | B18SS-2-012617 | 1L1743 | 1/26/17 | 1838 | TO-15, MeOH, CH4 | 30 | 5 | 4.5"Hg | 15psi |
| 02A | B18SS-3-012617 | 00763 | 1/26/17 | 1818 | TO-15, MeOH, CH4 | 30 | 5 | 5.0"Hg | 15psi |
| 03A | B18SS-4-012617 | 00882 | 1/26/17 | 1707 | TO-15, MeOH, CH4 | 30 | 9 | 8.5"Hg | 15psi |
| 04A | B18SS-5-012617 | 00816 | 1/26/17 | 1758 | TO-15, MeOH, CH4 | 30 | 5 | 6.0"Hg | 15psi |
| 05A | B13SS-1-012917 | N2055 | 1/29/17 | 1511 | TO-15, MeOH, CH4 | 30 | 5 | 5.5"Hg | 15psi |
| 06A | B13SS-2-012917 | 1063 | 1/29/17 | ~~1605~~ 1555 | TO-15, MeOH, CH4 | 30 | 5 | 6.5"Hg | 15psi |
| 07A | B13SS-2DUP-012917 | 1044 | 1/29/17 | ~~1601~~ 1535 | TO-15, MeOH, CH4 | 30 | 5 | 5.0"Hg | 15psi |
| 08A | B13SS-3-012917 | 37697 | 1/29/17 | ~~1544~~ 1536 | TO-15, MeOH, CH4 | 30 | 5 | 6.5"Hg | 15psi |
| 09A | B15SS-1-012917 | ~~0691~~ 37759 | 1/29/17 | 1755 | TO-15, MeOH, CH4 | 30 | 5 | 4.5"Hg | 15psi |
| 10A | B15SS-1DUP-012917 | N1955 | 1/29/17 | 1755 | TO-15, MeOH, CH4 | 30 | 5 | 5.5"Hg | 15psi |

| Relinquished by: (signature) | Date/Time | Received by: (signature) | Date/Time |
|---|---|---|---|
| [signature] | 1700 Jan. 30, 2017 | Fed EX | |
| Relinquished by: (signature) | Date/Time | Received by: (signature) | Date/Time |
| | | [signature] EAT | 4/31/17 1020 |
| Relinquished by: (signature) | Date/Time | Received by: (signature) | Date/Time |
| | | | |

**Notes:**
Canister 0691 will not be analyzed (B15SS-1-012917). Received without an initial vacuum

| Lab Use Only | Shipper Name | Air Bill # | Temp (°C) | Condition | Custody Seals Intact? | Work Order # |
|---|---|---|---|---|---|---|
| | Fed Ex | | NA | Good | Yes No (None) | 1701477 |

Form 1293 rev.11

Air Toxics LTD.

TO-15

# Chain-of-Custody Record



Contact Person: Terry Taylor
Company: Anderson Mulholland & Associates, Inc.
Address: 2700 Winchester, Suite 417 City: Purchase State: NY Zip: 10577
Phone: 914-251-0400, x 309 FAX:
Collected By: (Signature)

Project Information:
P.O. #
Project #
Project Name: BMS VI Invest.
Buildings 8,13,15, 18, and 30

Turn Around Time:
[X] Normal
[ ] Rush
Specify

Pressurized by: V.N
Date: 2/2/17
Press. Gas: (N2) He

| Lab I.D. | Field Sample I.D. | Canister I.D. | Date & Time | Analysis Requested | Canister Pressure/Vacuum Initial | Final | Receipt | Final (psi) |
|---|---|---|---|---|---|---|---|---|
| 11A | B13IA-1-012817 | 00124 | 1/28-29/17:1445 | TO-15, MeOH, $CH_4$ | 30 "Hg | 6.5 | 5.5"Hg | 5psi |
| 12A | B13IA-2-012817 | 6L0046 | 1/28-29/17:1508 | TO-15, MeOH, $CH_4$ | 30 "Hg | 5 | 5.0"Hg | 6psi |
| 13A | B13IA-2DUP-012817 | 00401 | 1/28-29/:1516 | TO-15, MeOH, $CH_4$ | 30"Hg | 6 | 4.0"Hg | 5psi |
| 14A | B13IA-3-012817 | N1639 | 1/28-29/17:1452 | TO-15, MeOH, $CH_4$ | 30 "Hg | 6 | 5.5"Hg | 5psi |
| 15A | B15IA-5-012817 | 907CMT | 1/28-29/17:1625 | TO-15, MeOH, $CH_4$ | 29 "Hg | 5 | 5.0"Hg | 5.4psi |
| 16A | B15IA-1-012817 | N0597 | 1/28-29/17:1544 | TO-15, MeOH, $CH_4$ | 28"Hg | 6 | 5.0"Hg | 6psi |
| 17A | B15IA-1DUP-012817 | 00937 | 1/28-29/17:1549 | TO-15, MeOH, $CH_4$ | 30"Hg | 5 | 4.0"Hg | 5psi |
| 18A | B15I5AA-012817 | 34744 | 1/28-29/:1612 | TO-15, MeOH, $CH_4$ | 30 "Hg | 7 | 4.2.5"Hg | 5psi |
| | | | | | "Hg | | V.N 2/2/17 | |
| | | | | | "Hg | | | |

Relinquished By: (Signature) Date/Time: Jan. 30, 2017 1200
Received By: (Signature) Date/Time: Fed EX
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: 2/1/17 1020 Andrea Anagnostis FedEx
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes: Do not analyze Can N0627, 0443, and 0908. Canisters not used for sampling. Do not analyze 36459. Also not used

| Shipper Name | Air Bill # | Opened By | Temp © | Condition | Custody Seals | Work Order # |
|---|---|---|---|---|---|---|
| Fed Ex | | AB | NA | Good | Yes No (None) | 1701477 |

EXECUTIVE NARRATIVE

| | | | |
|---|---|---|---|
| SDG No: | **1701477D** | Laboratory: | **Eurofins, Folson, CA** |
| Analysis: | **ASTM D-1946** | Number of Samples: | **18** |
| Location: | | | |

SUMMARY: Eighteen (18) samples were analyzed for methane in ambient air following ASTM Method D-1946. The sample results were assessed according to the following documents in the order of precedence: QC criteria from ASTM D-1946 method for measuring permanent gases and light hydrocarbons in refinery and other sources samples using gas chromatography (GC) and a thermal conductivity detector (TCD) and/or flame ionization detection (FID). The sample integrity and preservation section is validated following the criteria of the following guideline document: USEPA, Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

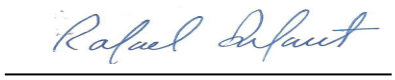
Results are valid and can be used for decision making purposes.

| | |
|---|---|
| **Critical issues:** | **None** |
| **Major:** | **None** |
| **Minor:** | **None** |

| | |
|---|---|
| **Critical findings:** | **None** |
| **Major findings:** | **None** |
| **Minor findings:** | **1.** Field duplicates analyzed with this data package. RPD within laboratory and generally acceptable control limits except for the cases described in the Data Review Worksheet. No action taken, sample and duplicate concentration < 5 x SQL. |

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888



Signature:
Date: March 17, 2017

METHANE DATA SAMPLE SUMMARY

METHOD: ASTM D-1946

METHANE - ASTM - D-1946

| Sample ID | Date | Results | Units | Dilution Factor | Lab Flag | Validation | Reportable |
|---|---|---|---|---|---|---|---|
| 1701477D-01A | 1/26/2017 | 0.00022 | % | 2.38 | J | J | Yes |
| 1701477D-02A | 1/26/2017 | 0.00019 | % | 2.42 | J | J | Yes |
| 1701477D-03A | 1/26/2017 | 0.00028 | % | 2.82 | - | U | Yes |
| 1701477D-04A | 1/26/2017 | 0.00019 | % | 2.52 | J | J | Yes |
| 1701477D-05A | 1/29/2017 | 0.00025 | % | 2.47 | - | U | Yes |
| 1701477D-06A | 1/29/2017 | 0.0029 | % | 2.58 | - | - | Yes |
| 1701477D-07A | 1/29/2017 | 0.0028 | % | 2.42 | - | - | Yes |
| 1701477D-08A | 1/29/2017 | 0.0013 | % | 2.58 | - | - | Yes |
| 1701477D-09A | 1/29/2017 | 0.00045 | % | 4.54 | - | U | Yes |
| 1701477D-10A | 1/29/2017 | 0.00014 | % | 2.47 | J | J | Yes |
| 1701477D-11A | 1/29/2017 | 0.00019 | % | 1.64 | - | - | Yes |
| 1701477D-12A | 1/29/2017 | 0.00020 | % | 1.61 | - | - | Yes |
| 1701477D-13A | 1/29/2017 | 0.00018 | % | 1.55 | - | - | Yes |
| 1701477D-14A | 1/29/2017 | 0.00016 | % | 1.64 | - | - | Yes |
| 1701477D-15A | 1/29/2017 | 0.00027 | % | 1.64 | - | - | Yes |
| 1701477D-16A | 1/29/2017 | 0.00021 | % | 1.61 | - | - | Yes |
| 1701477D-17A | 1/29/2017 | 0.00016 | % | 1.55 | - | - | Yes |
| 1701477D-18A | 1/29/2017 | 0.00019 | % | 1.71 | - | - | Yes |

Project Number:____1701477D_____
Date:_____01/26_&_29/2017_____

# REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to the following documents in the order of precedence: QC criteria from ASTM D-1946 method for measuring permanent gases and light hydrocarbons in refinery and other sources samples using gas chromatography (GC) and a thermal conductivity detector (TCD) and/or flame ionization detection (FID). The sample integrity and preservation section is validated following the criteria of the following guideline document: USEPA, Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #6. June, 2014). The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.
The hardcopied (laboratory name) _Eurofins_____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: __1701477D_____ Sample matrix: ___Air_____
No. of Samples: _____18_____

Trip blank No.: _____-_____
Field blank No.: _____-_____
Equipment blank No.:___-_____
Field duplicate No.:_1701477D-06A/1701477D-07A;_1701477D-09A/1701477D-10A_____
_____1701477D-12A/1701477D-13A;_1701477D-16A/1701477D-17A_____

___X___ Data Completeness
___X___ Holding Times
___X___ Calibrations
___X___ Blanks
___X___ Quantitation Limits
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Compound Identifications
___X___ Compound Quantitation

Overall Comments:_Methane_by_ASTM_method_D-1946_(modified)_____
_____

Definition of Qualifiers:
J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____ Rafael Dufant _____

Date:__ 03/17/2017_____

## DATA COMPLETENESS

| MISSING INFORMATION | DATE LAB. CONTACTED | DATE RECEIVED |
|---|---|---|

All criteria were met __X___
Criteria were not met
and/or see below _____

SAMPLE INTEGRITY AND PRESERVATION

Canister used for sampling of the ambient air must be demonstrated clean, and leak free prior to sample collection. Cleanliness is demonstrated by the analysis of an individual canister or analysis of a representative canister, if only batch cleaning was required. Leak proof testing is performed on individual canisters. Canisters are used in conjunction with gauges, valves and flow controllers. Therefore, canister should be demonstrated clean and leak free inclusive of these components as appropriate.

a. Leak proof test:
Was the pressure of each canister measured before shipping? **Yes** or No
Was the pressure of each canister measured before sampling? **Yes** or No
Did the canister hold vacuum/pressure within +/- 2 psi from the date shipped to the sampling date? **Yes** or No

Note:

1. The laboratory should be notified if the difference between the laboratory and field pressure is greater than 2 psi.

Actions:

Actions for use of canisters with failing leak test criteria are indicated in Table 1 below.

**Table 1. Canister Leak test Actions for TO-15 Analysis***

| Matrix | Difference in initial and 24 hour pressure (psi) Criteria | Action | |
|---|---|---|---|
| | | Detected Associated Compounds | Non-Detected Associated Compounds |
| Air | ≤ 5 | No qualification | |
| Air | > 5 | J | UJ or R |

*Excessive time period (> 3months) elapsed between leak test and actual use should be considered in evaluation of canister integrity.

b. Cleanliness

Integrity of the canister used for sampling of air for analysis should be maintained at all times including time of shipment to the field, sampling, shipping back to the laboratory and time of analysis. Analytical results of canister cleaning verification must be taken into account in the validation of sample results.

Does the canister meet the cleanliness criteria? **Yes** or No

Is the canister verification included in the data package? Yes or **No**

Actions:

Canister contamination actions are stated in Table 2 below.

**Note:** Laboratory states that samples were collected on SUMMA canisters 100 % qualified.

**Table 2. Canister Contamination Actions for TO-15 Analyses**

| Contamination Type/level | Canister Cleaning Result | Sample Result | Action for Samples |
|---|---|---|---|
| Clean Canister analysis | Detects | Analytes found in clean canister analysis are non-detects | No qualification required |
| | <CRQL | < CRQL | Report CRQL value with a U |
| | | ≥ CRQL and < 2x the CRQL | Report concentration of sample with a U |
| | | ≥ 2x the CRQL | No qualification required |
| | > CRQL | < CRQL | Report CRQL value with a U |
| | | ≥ CRQL and ≤ clean canister value | Report clean canister value with a U |
| | | ≥ CRQL and > clean canister value | No qualification required |
| | = CRQL | ≤ CRQL | Report CRQL value with a U |
| | | > CRQL | No qualification required |

c. Holding time and sample integrity

SUMMA canisters are to minimize sample charges or loss for majority of the analyte. Sample integrity is maintained by ensuring the system is closed tight and canister pressure from the time of sampling to the time of analysis is maintained within a difference allowable due to temperature change.

Was the canister pressure measured at the conclusion of the sampling period? **Yes** or No

Was the canister pressure measured upon arrival to the laboratory? **Yes** or No

Was the canister pressure difference between sampling and analysis less than 5 psi? **Yes** or No

Actions:

Qualify sample results using technical holding time information as stated in Table 3.

Pressure difference between sampling and analysis should be less than 5 psi. Qualify samples as per Table 3 requirements.

**Table 3. Holding Time Actions for TO-15 Volatile Analyses**

| Matrix | Preserved (Pressure difference between sampling and analysis ≤ 5psi) | Criteria | Action | |
|---|---|---|---|---|
| | | | Detected Associated Compounds | Non-Detected Associated Compounds |
| Air | Yes | < 30 days | No qualification | |
| | Yes | >30 days | J | UJ |
| Air | No | < 30 days | J | UJ |
| | No | >30 days | J | R |

Complete table for all samples and note the integrity and/or preservation not within criteria

| SAMPLE ID | DATE SAMPLED | DATE ANALYZED | Pressure difference < 5 psi | ACTION |
|---|---|---|---|---|
| | | | | |
| | | | | |
| All samples analyzed within the recommended method holding time. All summa canisters received in good conditions. Pressure difference < 5 psi between sampling and analysis. | | | | |
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The following pressure conversion is used, if necessary

| PRESSURE CONVERSION TABLE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PSI | ATM | kgf/cm² | in.$H_2O$ | mmHg | in.Hg | Kpa | Bar | mm $H_2O$ |
| 1 | 0.068046 | 0.070307 | 27.7276 | 51.715 | 2.03602 | 6.895 | 0.6895 | 704.28104 |
| 14.696 | 1 | 1.0332 | 407.484 | 760 | 29.921 | 101.325 | 1.01325 | 10350.0936 |
| 14.2233 | 0.96784 | 1 | 394.38 | 735.559 | 28.959 | 98.096 | 0.98067 | 10000 |
| 0.036092 | 0.002454 | 0.00253 | 1 | 1.8651 | 0.07343 | 0.249 | 0.00249 | 25.4 |
| 0.019336 | 0.001315 | 0.001359 | 0.53616 | 1 | 0.03937 | 0.1333 | 0.001333 | 13.618464 |
| 0.491154 | 0.0033421 | 0.03453 | 13.6185 | 25.4 | 1 | 3.3864 | 0.033864 | 345.9099 |
| 0.145 | 0.00987 | 0.010197 | 4.0186 | 7.5006 | 0.2953 | 1 | 0.01 | 102.07244 |
| 14.5038 | 0.98692 | 1.01972 | 402.156 | 750.062 | 29.53 | 100 | 1 | 10214.7624 |

All criteria were met __N/A___
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__N/A_ The BFB performance results were reviewed and found to be within the specified criteria.

__N/A_ BFB tuning was performed for every 24 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

Note: Samples analyzed using GC with either TCD or FID detection.

All criteria were met __X___
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:____01/12/17_____
Dates of continuing calibration:_02/09/17_____
Instrument ID numbers:_____GC-10_____
Matrix/Level:_____Air/low_____

| DATE | LAB FILE ID# | CRITERIA OUT RFs, %RSD, %D, r | COMPOUND | SAMPLES AFFECTED |
|---|---|---|---|---|
| | | | | |
| Initial and continuing calibrations meet method specific requirements with the following modifications: A minimum of 5-point calibration curve is performed. Quantitation is based on the average Response Factor. The standards used by the laboratory are blended to a >/= 95% accuracy. | | | | |
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General criteria employed for validation

All RFs must be > 0.05 regardless of method requirements.
All %RSD must be $\leq$ 15 % regardless of method requirements.
All %Ds must be $\leq$ 30% regardless of method requirements.
Method ASTM D1946 does not specify criterion for the curve correlation coefficient (r). A limit for r of $\geq$ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met __X___
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

| DATE ANALYZED | LAB ID | LEVEL/ MATRIX | COMPOUND | CONCENTRATION UNITS |
|---|---|---|---|---|
| | | | | |
| | | | | |
| ____All_method_blank_meet_method_specific_criteria_____ | | | | |
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| | | | | |
| | | | | |
| | | | | |

Field/Equipment/Trip blank

| DATE ANALYZED | LAB ID | LEVEL/ MATRIX | COMPOUND | CONCENTRATION UNITS |
|---|---|---|---|---|
| _No_field/trip/equipment_blanks_analyzed_with_this_data_package._____ | | | | |

All criteria were met __X___
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and $\leq$ AL, report the compound as not detected (U) at the SQL.
If the concentration is $\geq$ SQL but $\leq$ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is $\geq$ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

| CONTAMINATION SOURCE/LEVEL | COMPOUND | CONC/UNITS | AL/UNITS | SQL | AFFECTED SAMPLES |
|---|---|---|---|---|---|
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All criteria were met __X___
Criteria were not met
and/or see below _____

## VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.
List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

____LCS/LCSD_(Blank_spike)_analyzed_in_this_data_package;_recoveries_and_RPD_____
____within_laboratory_control_limits._____
_____
_____
_____
_____
_____
_____
_____
_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

| QUALITY | %R < LL | %R > UL |
|---|---|---|
| Positive results | J | J |
| Nondetects results | R | Accept |

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met
and/or see below ____X___

## IX. FIELD/LABORATORY DUPLICATE PRECISION

Sample ID_____LCS/LCSD_(02/09/17)_____ Matrix:___Air___
Sample ID_____1701477D-06A/1701477D-07A_____ Matrix:___Air___
Sample ID_____1701477D-09A/1701477D-10A _____ Matrix:___Air___
Sample ID_____1701477D-12A/1701477D-13A _____ Matrix:___Air___
Sample ID_____1701477D-16A/1701477D-17A _____ Matrix:___Air___

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD ± 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

| COMPOUND | SQL, % | SAMPLE CONC. | DUPLICATE CONC. | RPD | ACTION |
|---|---|---|---|---|---|
| | | | | | |
| Field/laboratory duplicates analyzed as part of this data package. LCS/LCSD (laboratory) RPD within laboratory control limits. Field duplicate RPD within laboratory control limits except in the cases described in this document. | | | | | |
| 1701477D-09A/1701477D-10A | | | | | |
| Methane | 0.00025 | ND | 0.00016 | - | No action, professional judgment. Sample/duplicate concentration < 5 x SQL |
| 1701477D-16A/1701477D-17A | | | | | |
| Methane | 0.00016 | 0.00021 | 0.00016 | 27 % | No action, professional judgment. Sample/duplicate concentration < 5 x SQL |

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met __X___
Criteria were not met
and/or see below _____

## XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1701477D-06A

Methane RF = 217680049

[ ] = (244980)/( 217680049)

= 0.00113 % OK

All criteria were met __X___
Criteria were not met
and/or see below _____

## XII. QUANTITATION LIMITS

### A. Dilution performed

| SAMPLE ID | DILUTION FACTOR | REASONS FOR DILUTION |
|---|---|---|
| All samples diluted by a factor of less than 4.54 | | |
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**System Performance**

**Action:**

Use professional judgment to qualify the data if it is determined that system performance has degraded during sample analyses. Note, for Laboratory Project Officer (PO) action, any degradation of system performance which significantly affected the data.

**Note:**

## Overall Assessment of Data

**Action:**

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Note, for Laboratory Project Officer (PO) action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).

**Note:**